



Project CommUNITY

Dr Maria Brucoli



R&D UK Centre

EDF

THE WORLD'S LEADING ELECTRICITY COMPANY

A global leader in electricity

- Covering the entire business chain
- 38.5 Mio customers; 158,161 employees; €72.9 b. sales

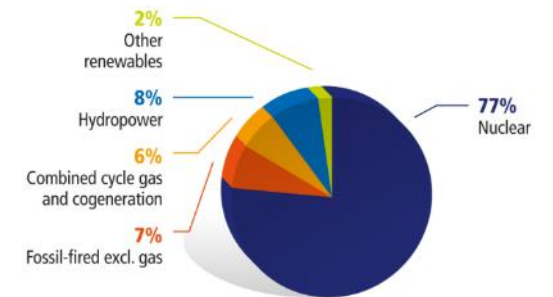
An international group

Rooted in Europe and committed for the long term to partnerships and cooperation agreements in high-growth countries

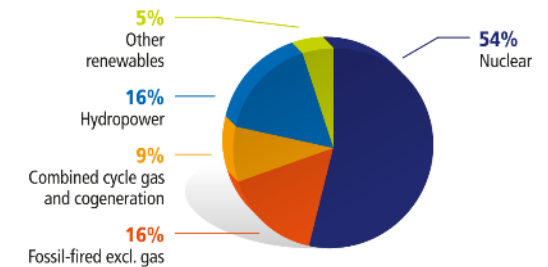
Focused on carbon free energy

- 102 g CO₂ /kWh and 87 % Carbon free
- 1st nuclear electricity producer
- 1st european Renewable energy producer
- 3rd European energy services provider

ELECTRICITY GENERATION 623.5 TWH



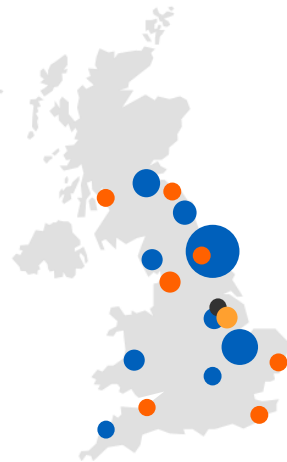
INSTALLED CAPACITY 136.2 GWe



EDF Energy



Generation



- Nuclear
- Wind farms
- Coal
- Gas



8
nuclear power
stations
(14 AGRs, 1 PWR)



28
wind farms
(including
1 off-shore)



2 + 1
coal gas
powered stations



2
EPR reactors
in progress at
Hinkley Point

**Sales &
marketing**



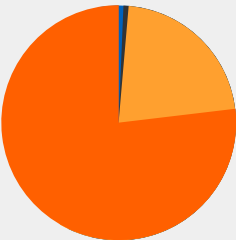
52.8 TWh
electricity sold



25.7 TWh
gas sold

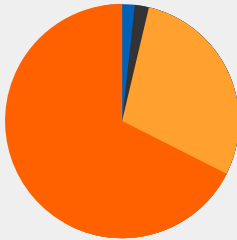
5.1 million
customer accounts

Generation
72.5 TWh



- Nuclear **77%**
- Coal **22.5%**
- Combined cycle gas and cogeneration **0.2%**
- Other renewables **0.3%**

**Installed
capacity**
13 GWe



- Nuclear **67.6%**
- Coal **31%**
- Gas **0.7%**
- Other renewables **0.7%**

Electricity retail market in UK



CHALLENGING!

Energy Live News

NEWS EVENTS VIDEOS TV & PODCASTS INDUSTRY

Finance & Markets

Consumers switching electricity suppliers soars to new heights

The highest number of switches were recorded last month

[in](#) [f](#) [t](#)

By Priyanka Shrestha
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Monday 20 May 2019

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Energy price cap to save households £75, Ofgem says

By Simon Read
Personal finance reporter

6 September 2018

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An energy bill price cap of £1,136 a year for "typical usage" has been proposed by the regulator, Ofgem.

It says the move will mean 11 million households on default deals will save about £75 on average, although the amount households could save will depend on their usage and supplier.

NEWS FROM
REGULATOR

NEW ENTRIES

Shell goes green as it rebrands UK household power supplier

Ron Bousso, Susanna Twidale

3 MIN READ



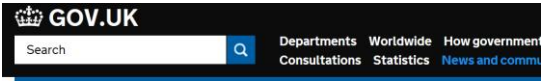
LONDON (Reuters) - Just over a year after buying First Utility, Royal Dutch Shell has rebranded the British household energy supplier and is switching all its customers to renewable electricity as the oil and gas giant seeks to expand its low-carbon business.



Electricity retail market in UK



SMART METERS
ROLL OUT



Home

Government response
Smart meters – the smart choice

Smart meters are the next generation of gas and electricity meters and offer a range of intelligent 'smart' functions, much like your smartphone and smart TV.

Published 7 August 2018
From: [Department for Business, Energy & Industrial Strategy](#)



They are being installed across Great Britain as a part of a national upgrade to our energy system.

One month to go until the solar panel feed-in tariff closes

Solar panel payments scheme still has space for new applications



By Sarah Ingrams

78 Feb 2019

WHAT'S NEXT
AFTER FIT?



WHAT CUSTOMERS Welcome to Generation Electric WANT?

We're proud to be the UK's largest producer of low-carbon electricity⁽¹⁾. We believe that, together, we can create a cleaner, low-carbon future.



R&D UK Centre



CommUNITY | PROTECT-PROPRIETARY

11 August 2019

CommUNITY





Community Urban Neighbourhoods Internal Trading of energy

Aims at designing and implementing the new infrastructure to support a local energy market based on Peer-To-Peer (P2P) energy trading.

The proposed market is trialled on a “live site” comprising a multi-tenant building in Brixton, London.

Residents are able to source energy from a solar PV system on the roof, store energy in a battery on the top floor and trade energy with one another using a blockchain platform and a smart phone app.

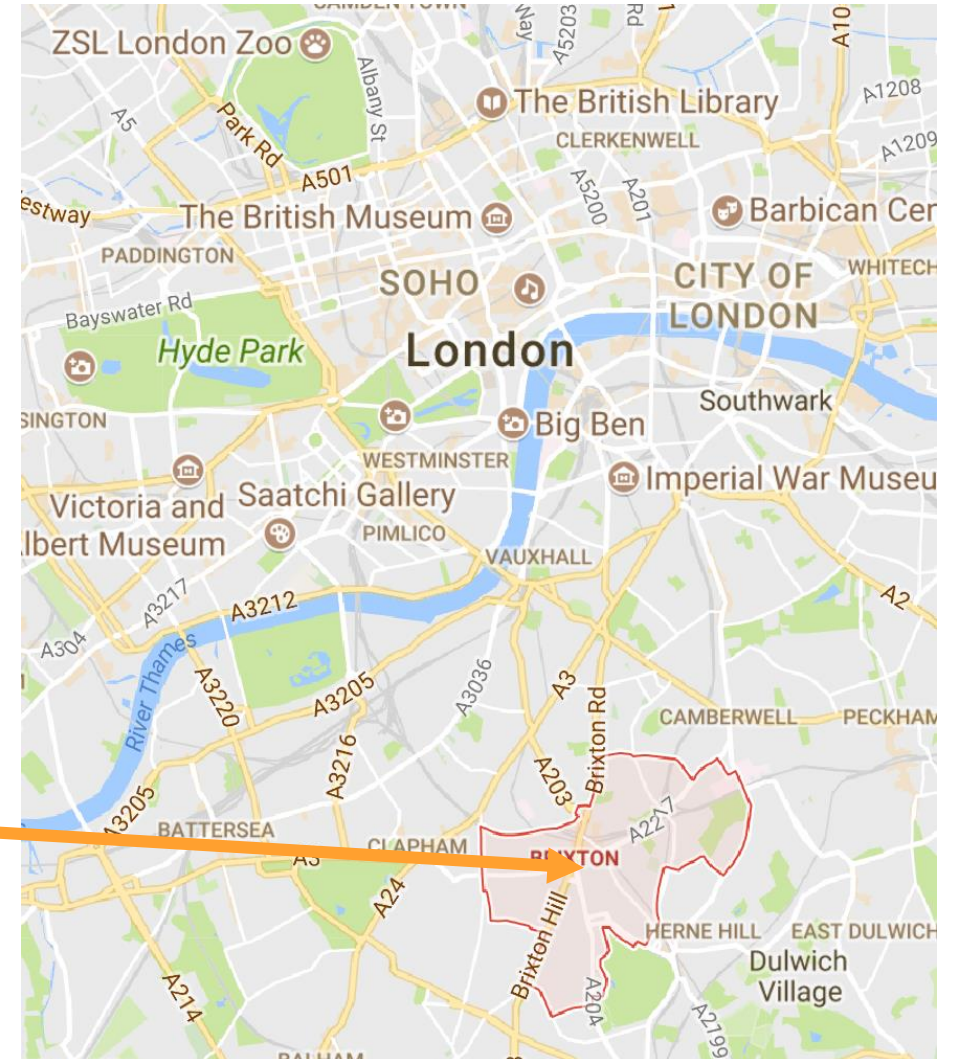
Delivery of the project has been made possible after Ofgem provided a regulatory “sandbox”.

Go-live expected September 2019 – possible 15 participants.

CommUNITY is a commercially deployable proposition which covers all elements in the consumers’ journey.

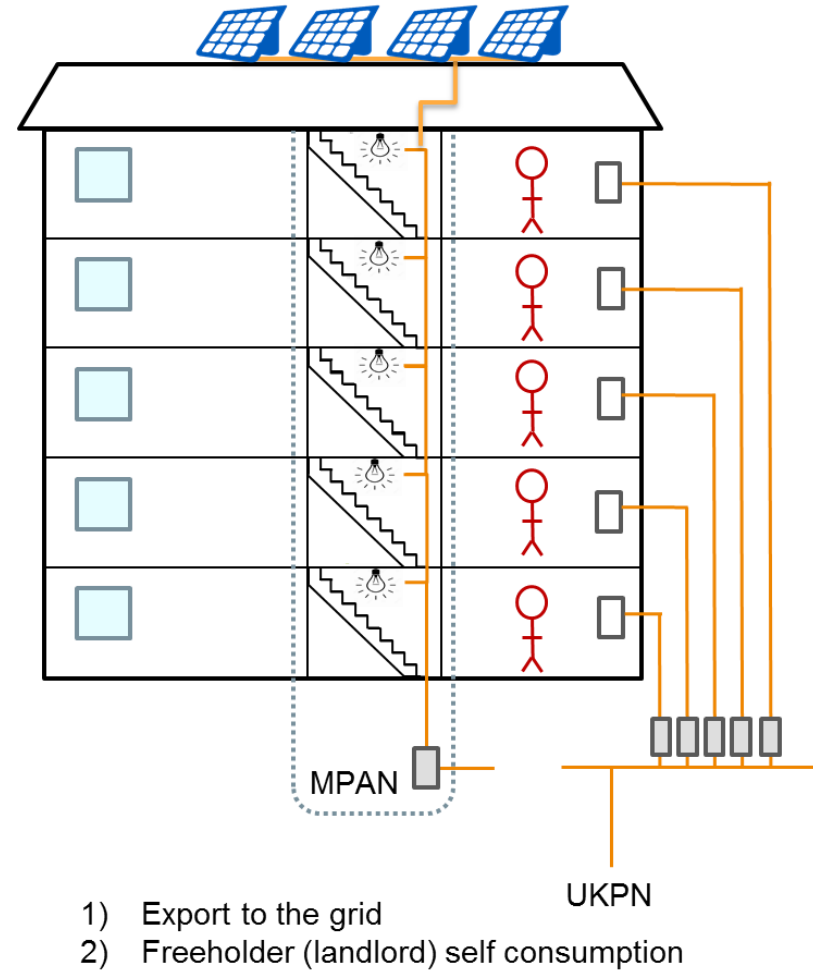
Elmore House, London

62 apartments + 37kWp solar PV



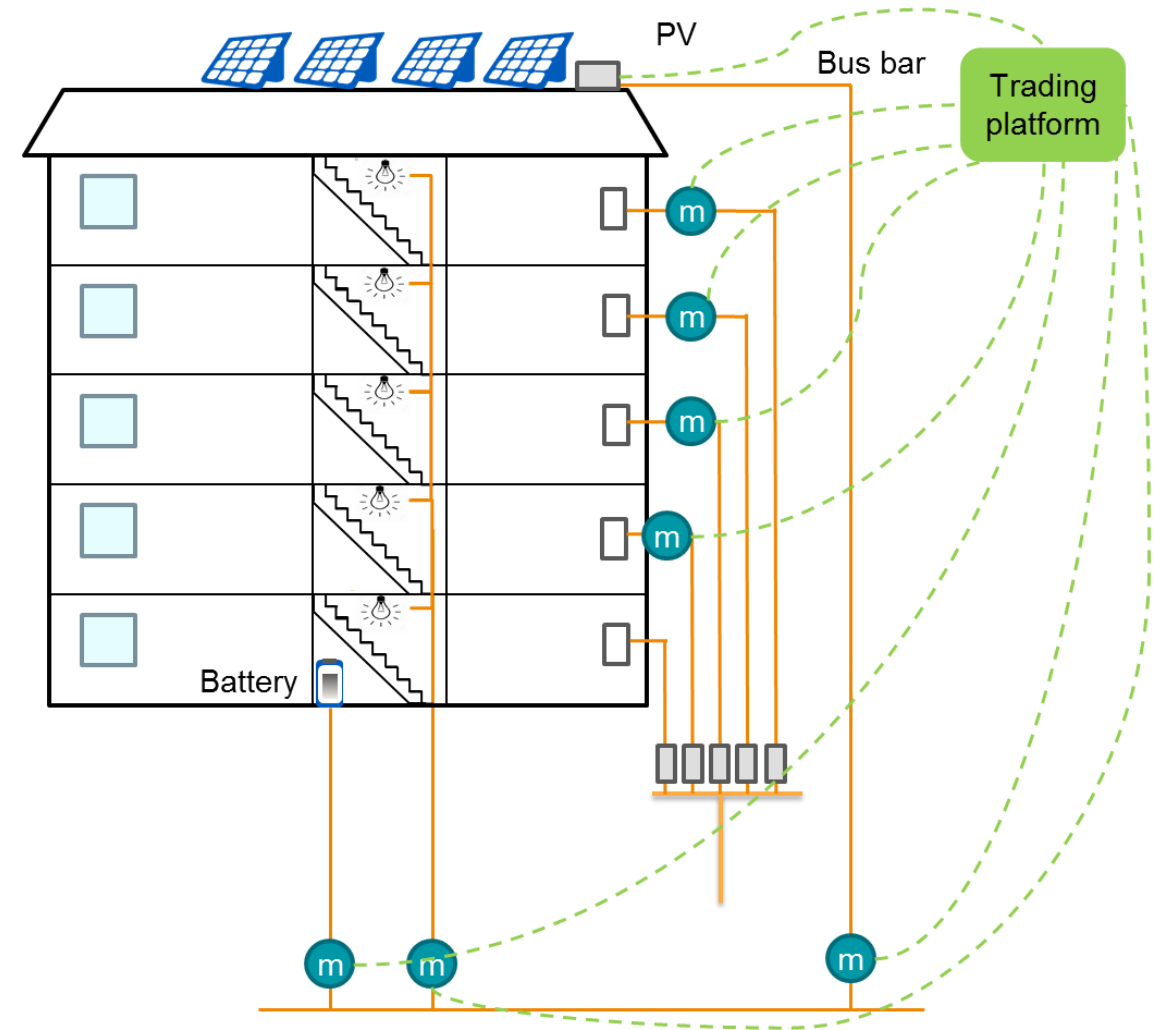
Residential Buildings BAU

- Distributed generation is usually connected to the landlord system
- Tenants wiring is owned by the distribution network operator, until recently
- Self-consumption can only be implemented on the landlord system



Non-Wire Energy Solution

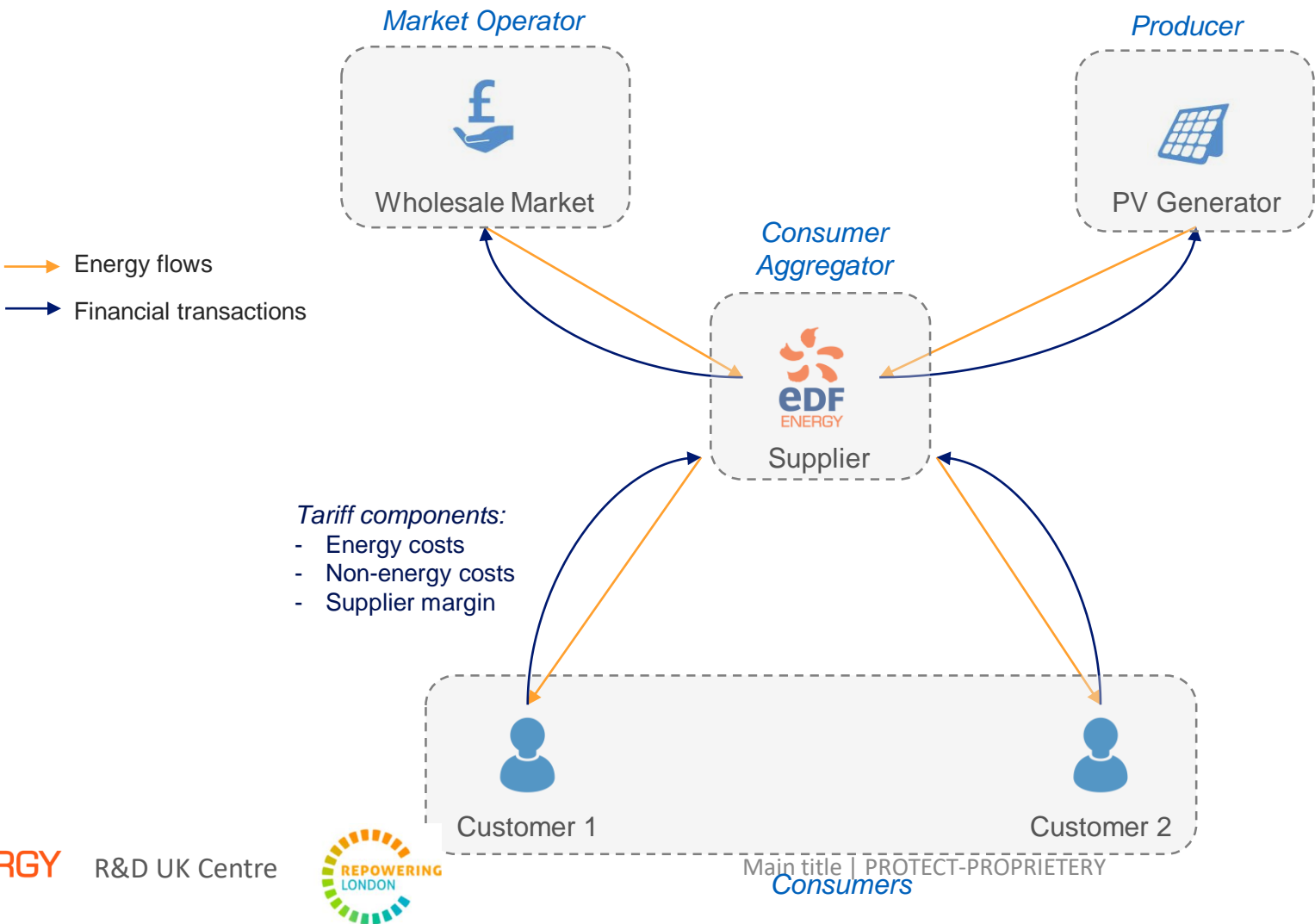
- Implement a “virtual” microgrid where power is locally produced, traded and consumed
- Peer-to-Peer (P2P) energy transactions
- Local settlement to be performed by EDF Energy as electricity supplier
- Flexibility of tenants to join the P2P community or not
- Technology light project
- ICT and data acquisition system to be integrated with smart meters rollout
- Test a full commercial model with billing system in place
- Closely monitored by Ofgem, the UK regulator, for lessons learnt and possible future developments



Sandbox Licensing Options Investigated for CommUNITY

Business As Usual

One facilitating supplier enabling self-consumption

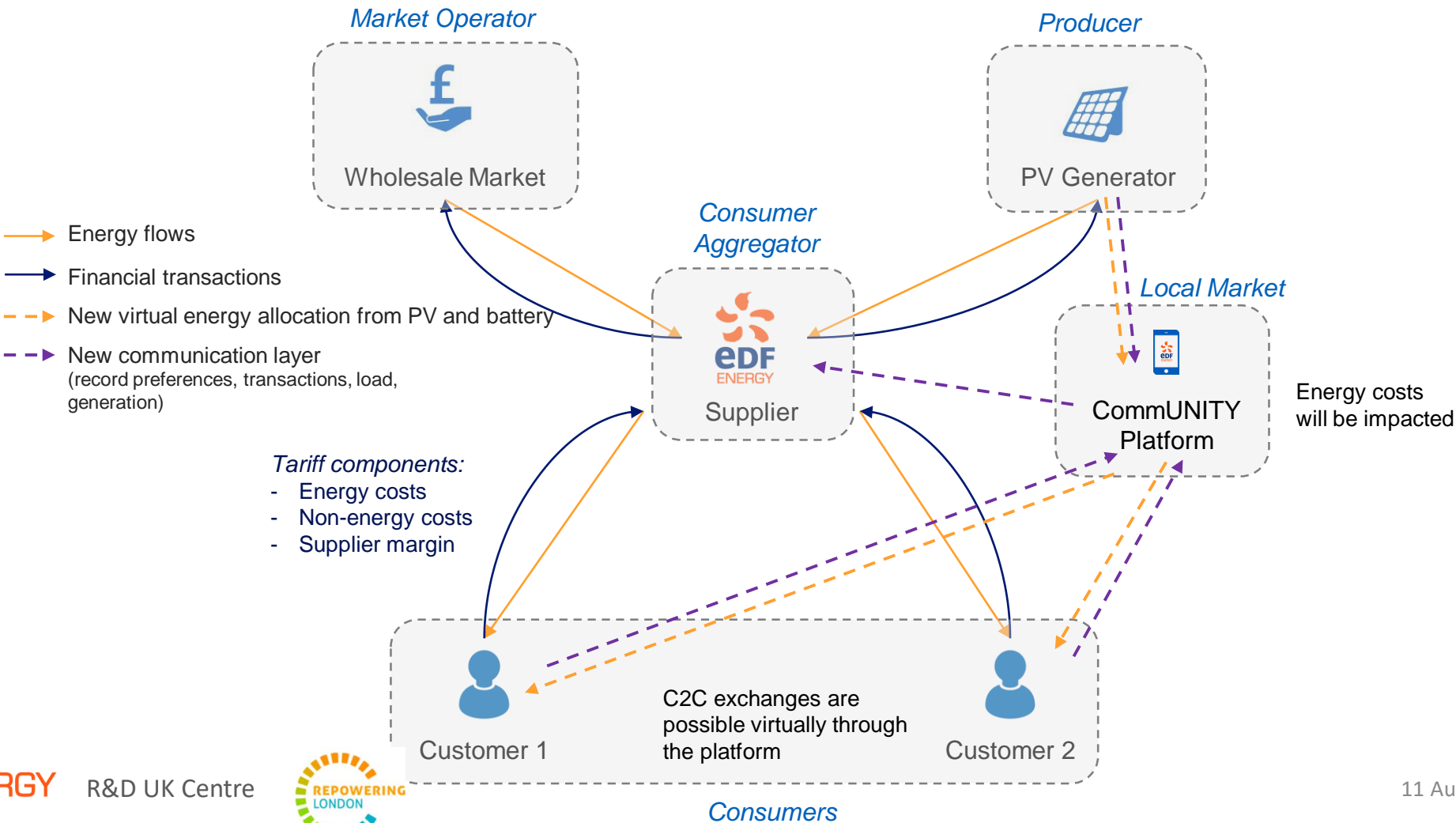


Sandbox licensing option investigated for CommUNITY

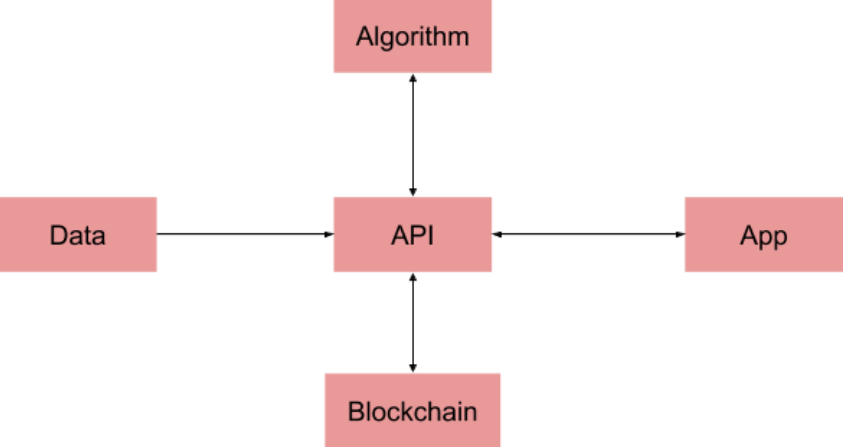


Single supplier

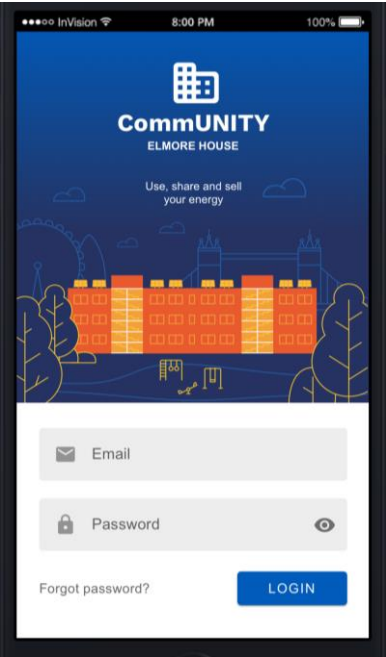
Site meters registered to 'facilitating' supplier (who is also the platform operator)



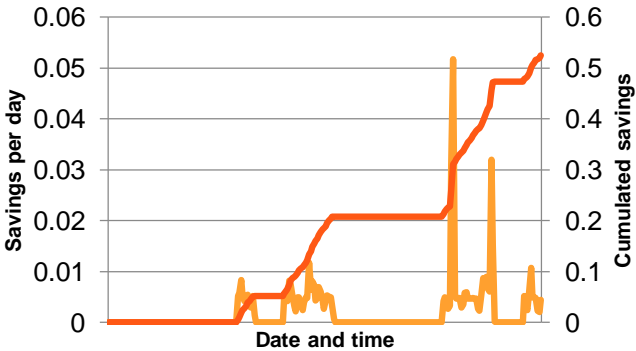
P2P Platform



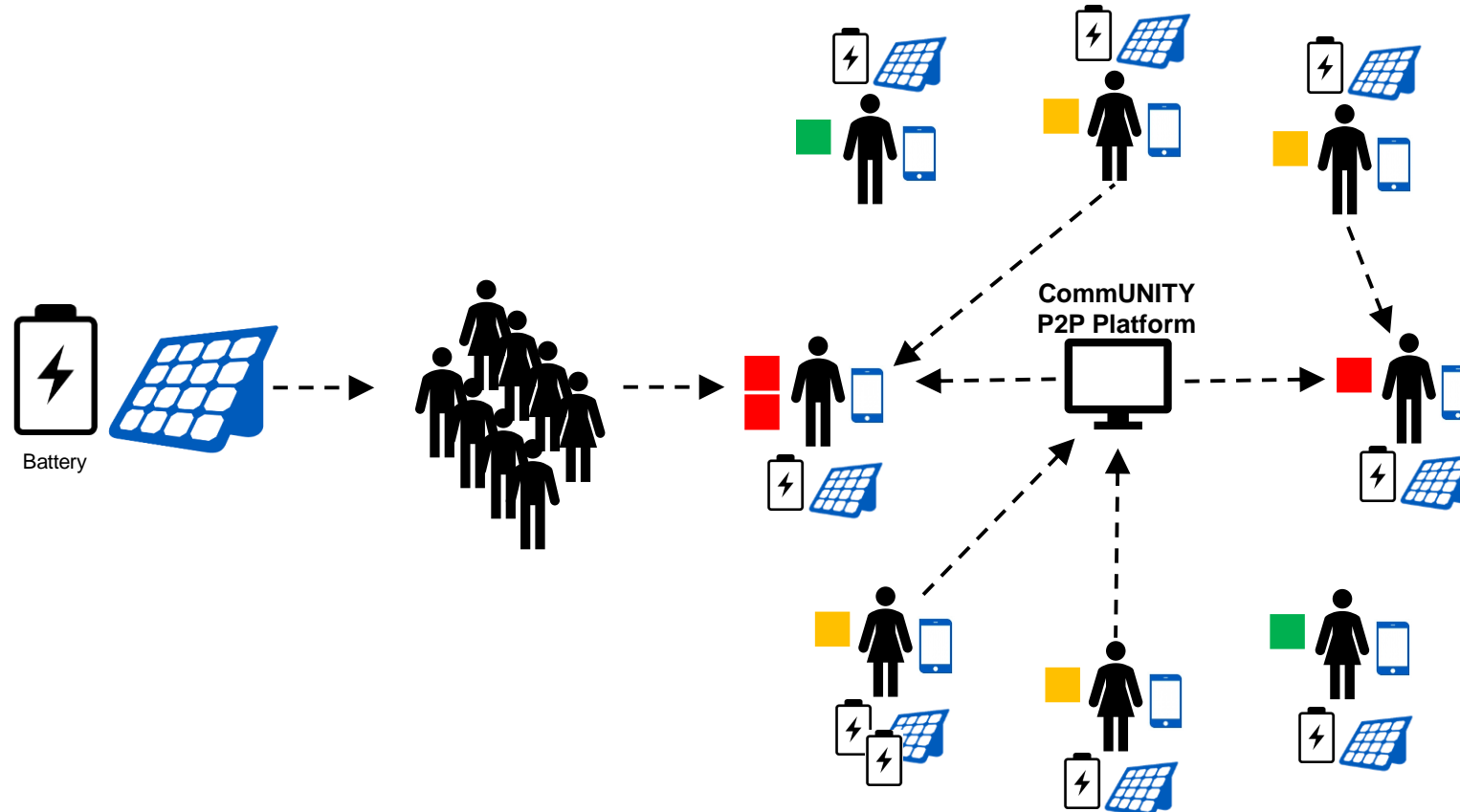
```
Editor - \\customer\\userdat$\\crawley\\Wang03H\\commUNITY\\TestKevinLocal_bis.py
temp.py TestKevinLocal_bis.py
872 'categories': ['New_Global_Analysis', 0, 6, 0, 8],
873 'values': ['New_Global_Analysis', i+1, 6, i+1, 8],
874 })
875 if i != len(list_of_ID)-1:
876     chart_pie.set_title({'name': 'Origin of consumption participar
877 else:
878     chart_pie.set_title({'name': 'Origin of consumption of the Con
879
880 chart_pie.set_style(12)
881 worksheet.insert_chart(len(list_of_ID) + 2 + i*15, 1, chart_pie, {
882
883 writer.save()
884
885 if __name__ == '__main__':
886     #Please choose in the list below what you want to do :
887     # 1 : Download input
888     # 2 : Download output
889     # 3 : Concatenate
890     # 4 : Check data
891     # 5 : Analysis
892     # 6 : Graph and modifications --> Write the date you want to plot in t
893
894     #BEFORE RUNNING 1 OR 2 DELETE OR MOVE THE CSV AND EXCEL FILES IN THE L
895
896     choice = [1,2,3,4] #1,2,3,4,5,6
897
898     input_
899     output
900     result
901
902     for x
903         if
904         el
905
906
907
```



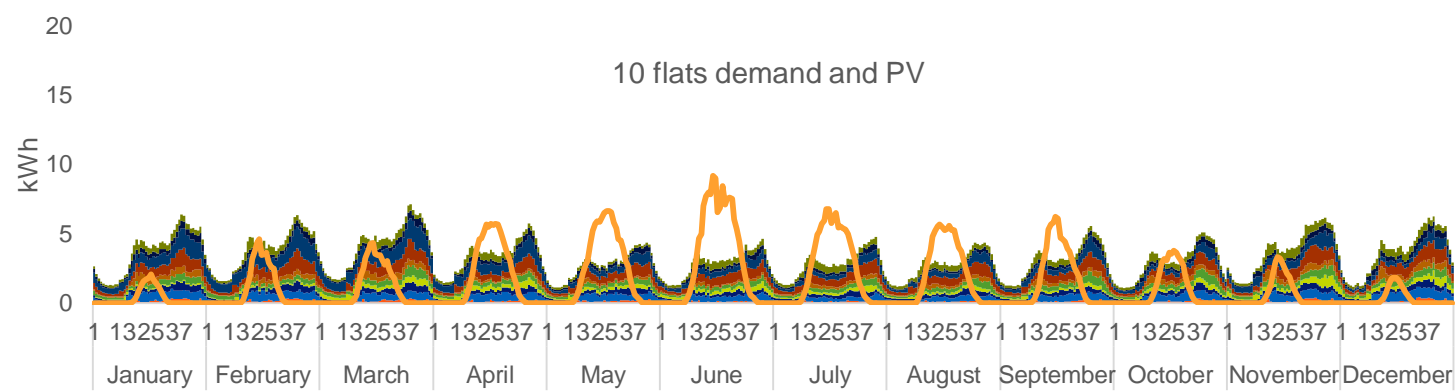
Analysis of savings



P2P Market

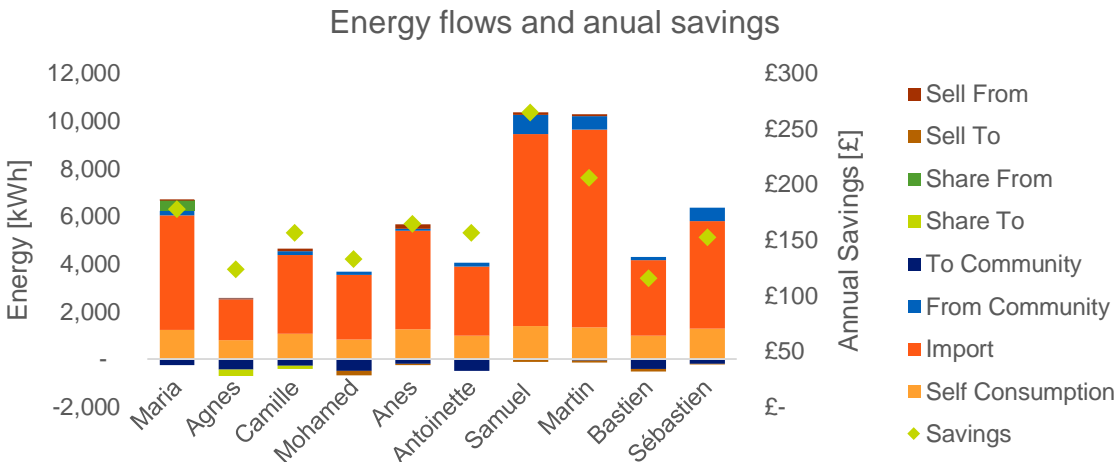
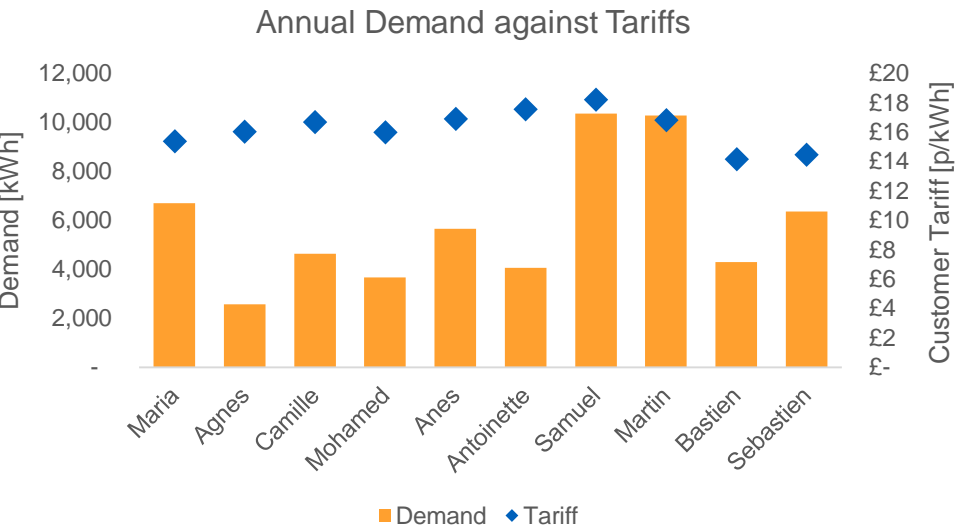


Use Case 10 participants (simulation)

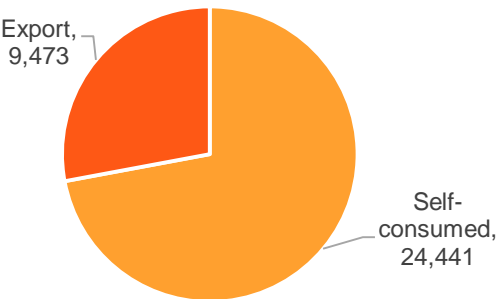


		Flat owner	ID	Annual Demand	Tariff	Preference
Most popular participants		Maria	0	6,703 kWh	15.41 p/kWh	Share: Community
		Agnes	1	2,566 kWh	16.05 p/kWh	Share: Maria
		Camille	2	4,642 kWh	16.7 p/kWh	Share: Maria
		Mohamed	3	3,666 kWh	15.98 p/kWh	Sell: Anes
Higher Tariff	Just moved in	Anes	4	5,657 kWh	16.92 p/kWh	Sell: Maria
	Mutual preferences	Antoinette	5	4,062 kWh	17.56 p/kWh	Share: Community
		Samuel	6	10,358 kWh	18.21 p/kWh	Sell: Martin
Lower Tariff		Martin	7	10,281 kWh	16.83 p/kWh	Sell: Samuel
		Bastien	8	4,286 kWh	14.15 p/kWh	Sell: Camille
		Sebastien	9	6,357 kWh	14.47 p/kWh	Sell: Agnes

Use Case 10 participants (simulation)



Self-consumption in the CommUNITY



Flat owner	ID	Savings [£]	Savings [%]
Maria	0	£ 178	17%
Agnes	1	£ 124	30%
Camille	2	£ 157	20%
Mohamed	3	£ 133	22%
Anes	4	£ 165	17%
Antoinette	5	£ 157	22%
Samuel	6	£ 265	14%
Martin	7	£ 206	12%
Bastien	8	£ 116	19%
Sebastien	9	£ 153	16%

Thank you!

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Main title | PROTECT-PROPRIETARY